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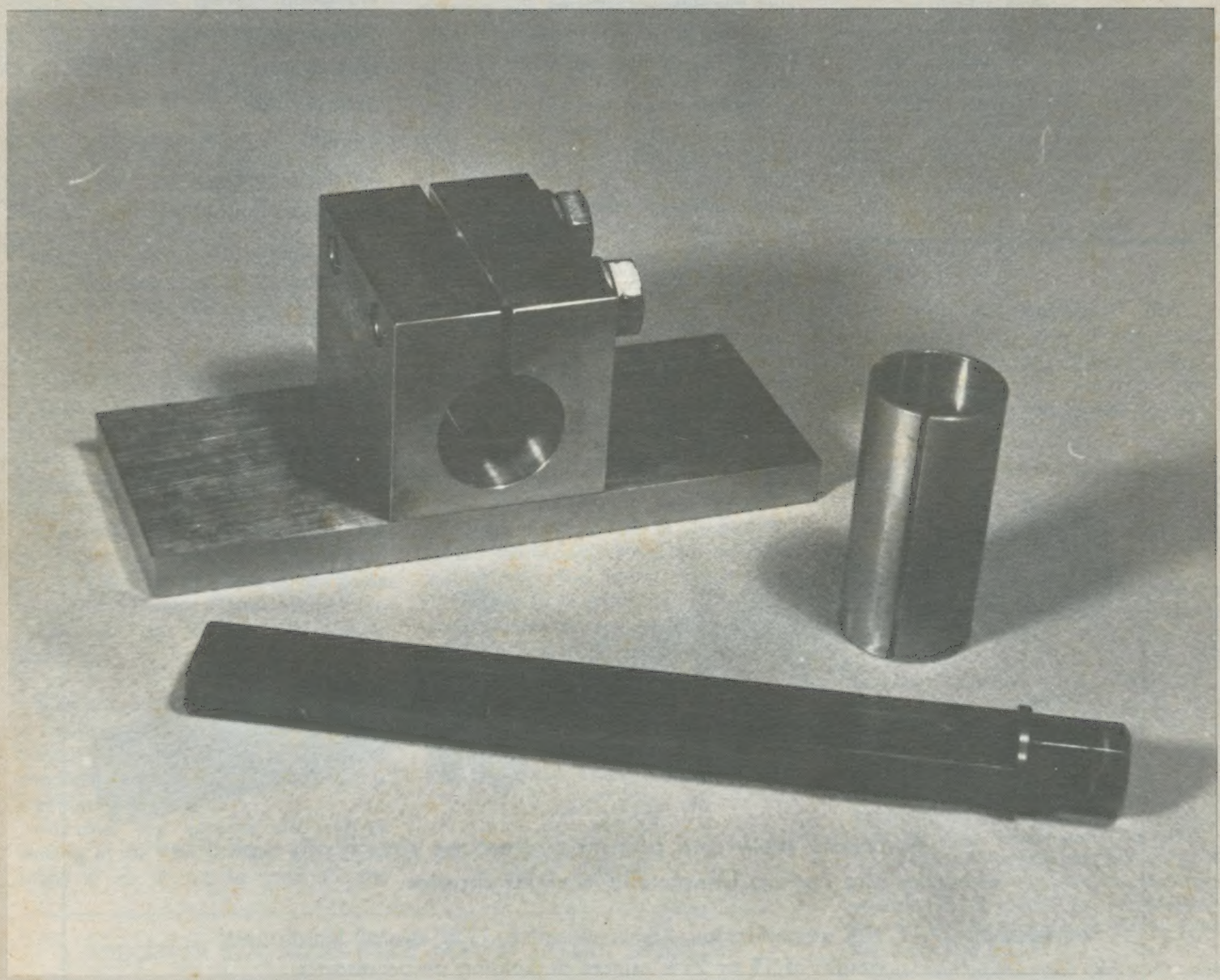
Precision

SHOOTING

a magazine for shooters by shooters



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PRECISION SHOOTING is printed by offset. Display copy is to be furnished by the advertiser. Advertising plates will be made from negatives, good black and white glossy prints or clear copy. Displays will be made to Advertiser's specifications. All normal composition will be set according to our own standards. Rate cards will be mailed to Advertisers on request.

The Precision Shooting back issue file awaits your request. We have recently acquired some additional back issues which will fill a few of the lower piles.

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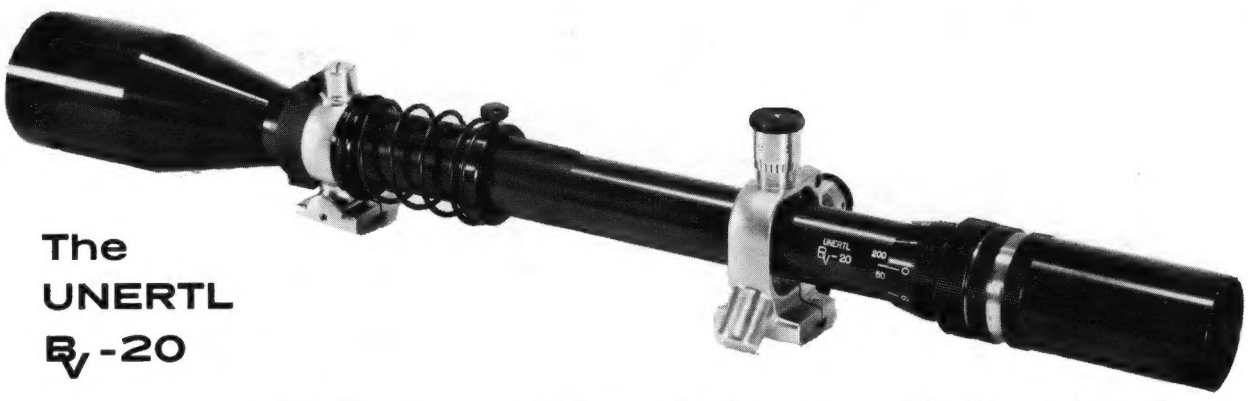

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Cover Story

With the advent of the glue-in action and interchangeable barrels such as those mentioned in the "Glass Monster" story elsewhere in this issue it becomes apparent that quick change barrel and action tools are a must.

The cover set, made by Al Davidson of Las Cruces, New Mexico, is typical of the new breed of portable tool.

Clamp the base to a truck bumper or heavy table, insert the proper barrel bushing, clamp the barrel in the base, put the action wrench in the bolt guides and apply pressure with a socket or box wrench and a barrel change is on the way.

Cost conscious shooters have found this approach to offer much in that line, not to mention the familiarity with one stock, scope and trigger. Look for this trend to increase as time and exposure prove it to be very practical.

"The Editor's Hour"

We have received word that the revised 1976 IBS Rulebooks have been printed and are available from the Recording Secretary for the meager sum of $1.00 per copy.

It is suggested that you obtain a copy and familiarize yourself with the additions and changes which have been made.

* * *

Hunter Class shooters take note that a meeting has been scheduled for June 5, after the last match of the day at the Mainville range where the Pennsylvania State Championship is being held that weekend.

Since this is a two day shoot you will not have to run home that night so plan on attending and help firm up the items concerning Hunter Class competition which will go to the IBS Winter Meeting.

* * *

New products will take the attention of future issues of Precision Shooting. News releases are arriving daily and the information will be passed along as it is prepared.

To whet the appetite we will be looking at the new Leupold 16X target scope which should be great for the 1,000 yard prone gunners and possibly the Silhouette crowd, not to mention serious varmint shooters.

The Remington 700 Varminter will be coming out in .308 Winchester. This should be good news to the Silhouette shooters. It is an answer to a long loud cry from the Hunter Class shooters who, as a group, have been seeking this combination in a factory Remington for some time. We will take a long hard look at this one for you.

Lyman Gunsight company has some new glass waiting in the wings. The new models feature integral adjusting knobs and improved optics. A 25X also makes its appearance. More goodies from the nice people at Lyman.

Single Shot shooters may be in for a treat with the possibility of more news and reports in future issues as things advance in that interesting area of shooting.

* * *

The announcement of Precision Shooting stock for sale in the past few issues has brought some advancement in that area. The interest is good and the response is gratifying. There are a good number of new stockholders as a result of that offering.

Don't be left out by not purchasing your shares soon. Send $25.00 per share to our attention and we will return your certificates as soon as they are processed. Thank You!

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IBS Memo

IBS Targets — Charter and Life Members

100 or 200 yard benchrest targets are $17.60 per 500. 300 yard benchrest targets are $18.54 per 500. 100 yard hunter targets are $12.22 per 250. 200 yard hunter targets are $11.75 per 250.

All target orders, as usual, are figured with a 10% discount for affiliated clubs, plus handling and shipping charges.

Mail order to: Donalee Stekl, R.D. 1, Robinson Road, Mohawk, N.Y. 13407 or to R. W. Hart, Nescopeck, Pa. 18635.

The annual membership fee is $10.00 — Life membership in IBS has been set at $125. Apply to the recording secretary for enrollment. IBS Affiliated Club Memberships $10.00.

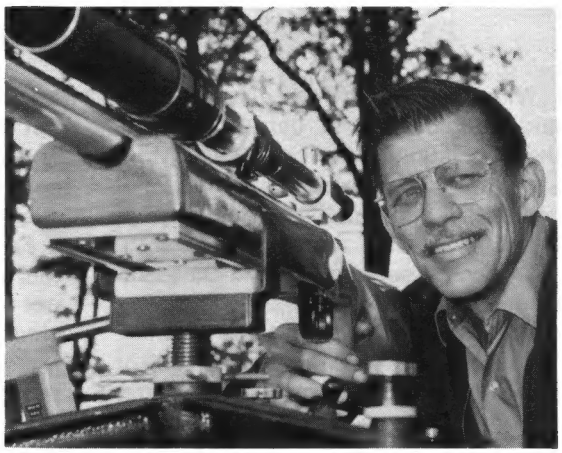
New rule books now available, with minor changes — plus IBS By-Laws at $1.00 per copy.

IBS Charter Membership Patches and regular patches are available at $2.00 each.

When ordering **Charter Membership patches**, please indicate your 1970 Card number.

Benchrest Feature

by Lt. Col. Rick Hornbeck
R.D. 1, Box 51
Pine Bush, New York 12566



A REFEREE LOOKS AT THE BACKER

You come off the line after shooting a rather good group. The range officer clears the line and calls the target crew to change targets. Shortly thereafter the P.A. calls the referees to the target shack. There is a mild panic throughout the group that just came off the line. A quick check of the rounds fired is made. The mind tries to recall how many sighters were fired. Did someone have only four shots? A cross fire? You count empty shells and find eight. You fired three sighters and the five for record. But there remains a pang of uncertainty in your mind. As you note the ref's closing on the target shack, you wonder if you had goofed, and hope you don't hear any more about it.

You serve as a referee for a very short time before you are called to check a backer. The folks doing the scoring can only find four shots on the backer. This was first noted by the target crew during the backer change and they point that backer out to the score crew. The backer is examined and that fifth shot seems to be missing. The referees now have the responsibility to determine the true status of that backer. This is quite common.

The moving backer, or prover dover as our Australian bench shooting friends call it, is a mighty important aspect of our sport, a continuous pain to the target crew and, on the surface, it might look like an item that can disqualify someone unjustly. Such is not the case. To assure yourself of that, serve as a referee a few times. You'll find that the three ref's will all agree in short order as to the number of shots in that backer.

We here in the U.S. have limited backer problems, each bench club developing good backer systems. Letters from Ann Brummell, Punchbowl, NSW, Australia, indicate that they have some problems in Australia with backers and keeping them going. Ann, by the way, along with husband Tom, forms a well known benchrester team of top performers. Ann has taken a number of National Title matches and set a number of records.

The late Harry Madden indicated that backer operation was of great concern to him. Because of limited range facilities for bench competition this has been a problem to the Australians.

I have served as referee on ranges throughout the mid-west and in the east, and can't think of a range that has a backer system that offers the referee or competitor any problem although any number of backer systems are in use. This is an indication of a lot of hard work and thought by each club during the construction and development of the range. The backer system can make or break a shooter; must function perfectly in all kinds of weather, and offer the ability to get backers changed quickly. Even then, the best of them can fall due to wind and rain. World record groups can be lost if the backer fails.

It does happen. Fortunately not often. At a night match at Tulsa back in the early '60's, with little or no wind and no rain, but with very high humidity, the backer paper came apart during the last relay at 200 yards. It cost Larry Engelbrecht a Heavy Varmint aggregate record. That one missing backer was a heart breaker, not only for Larry, but for the club. It was just a matter of the air being so damp that the paper pulled apart.

Over the years, I have found that a good pocket magnifier is a handy item to have as a referee. I finally settled for the type used for line count by printers. The basic procedure goes like this. The target and backer are examined by the ref's; very often making it possible to determine, at that point, that there is or isn't the right number of shots. The backer is then glassed with the magnifier and after each referee has a good look they determine the backer

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status. A double hole shows up nicely under this procedure, and there isn't much chance of a competitor getting a bad call. Keep in mind that the attitude of every referee I have served with has always been: "The shooter gets the benefit of any doubt." Doubles do happen and are most common when shooting conditions are such that a string of shots are fired very rapidly. The slightest displacement right or left in the group when firing rapidly can produce doubles in the backer. When called upon to be a ref' at Council Cup when conditions have shooters shooting rapidly as the conditions they like comes along, I know that we are going to have doubles. But there isn't very much chance that the shooter will be disqualified because of the characteristics of the holes in the target and backer.

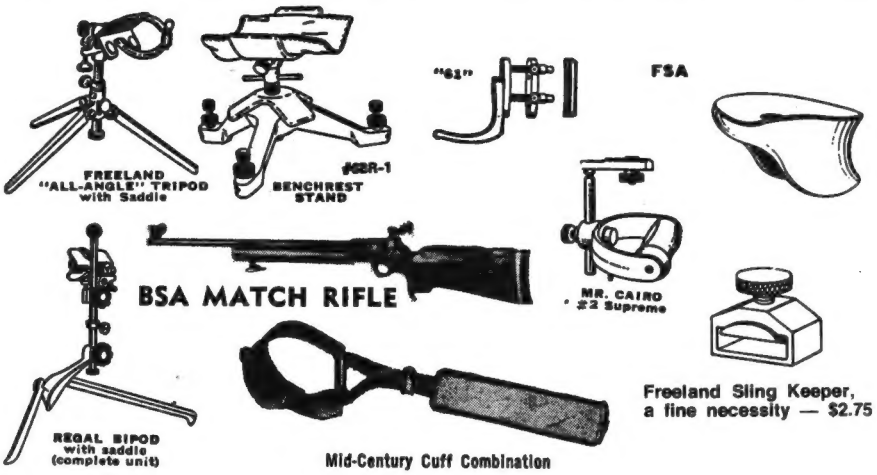
The rule book requires that an additional stationary backer is required in addition to the moving backer at all Championship Tournaments. The stationary backer at 100 yards is placed exactly 36 inches behind the record target and 72 inches behind the target at 200 yards. Since the distance between benches is known, and the distance between the stationary backer and target are known, it's a simple matter to make a scale that can be used to measure a cross fire and determine exactly which bench the cross fire came from. The hole will lay exactly on one of the indices and there is no question as to what bench the shot came from. This takes a very heavy load off the referees. Although a requirement for Championships, it may be used at any range in any match if a club wants to use it. As a competitor, or referee, I like to see it used. It eliminates the requirement of interpretation on the part of referees. As far as cross fires are concerned.

All too often a competitor is disqualified; not because of the system and rule book, but because he didn't follow the procedures and rules of the current rule book. As I have often said before in these pages, time spent reading the rule book is time well spent. If you know what to do in the event of a crossfire or your first shot at the sighter going into the record target, to name only two mishaps that can happen to any competitor, you can prevent being disqualified. The content of the rule book concerning these matters is the responsibility of the individual, not the range officer nor the referees. Knowing what the book says can alleviate that moment of panic when a goof is rendered, and a "disq" on the match record sheet.

Might I point out that the rule book indicates that the competitor is responsible for submitting all possible record targets and moving backers for those targets. If you have a record going, keep track of those targets and get those backers from the scoring shack after the match. In most cases if you have a record going, the scoring crew will set them aside because they notice such things. **It's your final responsibility, however.**

The prover dover (backer) is a mighty important item in all registered matches. It can save someone from disqualification, validate records and helps the referees in a professional and fair judgement. The addition of the stationary backer eliminates any judgement on the referees part. It indicates valid information. Backers take a lot of time and money for the clubs to develop and build, plus maintain. In my book, they are a valid requirement!

FOR THE SHOOTER BY A SHOOTER



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Technical Column

M.H. Walker
Technical Editor
R.D. 1, Warren Road
Mohawk, N.Y. 13407

CASE FORMING WITHOUT BULLETS

Over the past few years, I have bought a couple of 722 Remingtons which were made into 22-30 Remingtons or 22 Bellows as it is called around here. Orin Bellows, a gunsmith in our town, made several of these chambered to use 30 Remington cases.

I would appreciate it if you would have any knowledge as to how I could fire form these cases without loading with a bullet. It seems to me that Mr. Bellows used corn meal and small amounts of some type of powder with wax in the end of the cases to hold pressure. Since I was quite young at the time, I can't remember. Maybe through your years of experience you could help me out.

Bill Brawand
Box RD 1
Wilcox, Pa. 15870

Sorry I can't help you, Bill. I have never fire formed a case without using a bullet. I have seen a description of hydraulic forming using a special chambered section of barrel. But never fire forming without bullet.

M. H. W.

Ed. Note: Small charges of fast burning powder such as bullseye or unique can be combined with filler of the type mentioned or toilet tissues to develop forming pressures. Perhaps one of our cast bullet shooters can fill us in on this technique.

R.R.M.

FINE POINTS

I have been getting involved in benchrest shooting, and need to get my priorities straight. I have been an I.B.S. member for the past two years and have taken great interest in your technical articles printed in the Precision Shooting magazine.

I am shooting a Heavy Varmint Hart rifle, Rem. 222, with his No. 1A action and SS barrel. I am using Rem. brass weighed out and neck turned to .0150. I am using a precision Starrett indicator in conjunction with a magnetic base and a mandrel turned to .223 to measure this. I am using a Hart seating die, but neck resizing about 1/3 of the neck with an RCBS die, 7/8 X 14 threads. I would like to purchase precision V-blocks and measure the neck run-out relative to the cartridge case body. Do you feel this is worthwhile?

I realize the bullet is the most important part of the round, and I measure them for length, and sort them. Do you feel bullet spinning is worthwhile? I realize that wall thickness also plays a part, but that is out of my control. I use Sierra 52 gr. benchrest bullets.

Since I am using a Hart seating die is it necessary to check bullet run-out relative to the case body or can I assume they are concentric? The bullets are seated so they do not quite touch the lands. Groups seem to be running around .250 when I do my part. Any help will be greatly appreciated.

Larry P. Miller
Box 464 RD 1
Alburtis, Pa. 18011

Runout of more than .002 T.I.R. is important if you are shooting a load which requires seating the bullet away from the lands.

The bullet seater is not as important, in my judgement, as the sizing die. If the neck of the case is sized off center the bullet die will not correct the situation. Excessive sizing of either the length or the diameter will cause run out. If you have good eyes you can see .002 T.I.R. on the bullet when the loaded round is rolled on a good flat surface.

If the bullets are seated out to touch the lands more run out is permissable, but exactly how much has not been pin pointed.

Your groups of .250" indicate that there is not too much wrong.

M. H. W.

OFF CENTER PRIMERS

There was an article in the last **Precision Shooting** which discussed off center primer strikers. There was mentioned an army officer who discovered that off center strikes were the most accurate on the target.

He had a good theory on why this should be. Here is another. An off center strike on the primer would induce sliding friction under pressure, creating more heat for longer.

It was a good article in-as-much as it should have induced many letters and experiments among people well qualified for both.

Hope this letter will help this along.

A. O. Tshirner
320 Broadway
Santa Cruz, CA. 95060

I am sure that Mr. Kreuzfeuer did not mean to infer that all shooting with off center firing pin blows would be more accurate than shooting with centered blows.

Ignition of the powder by the primer and the mechanics of indenting the primer with the firing pin is very complex. The fact that the Army Officers report was on 30-06 accuracy is significant. The 30-06 has always been difficult to ignite properly, probably due to the length diameter ratio of the case. As we all know the .308 Win (7.62 NATO) is considered more accurate, in almost every accuracy test conducted, than the 30-06. My opinion is that a major portion of the difference is in the ignition.

The thickness of the bridge of primer material between the anvil and the cup of the primer is extremely important and it could be that the Army Officers findings were influenced by the primer in use at that time not having adequate height of priming compound between anvil and cup.

M. H. W.

Benchrest Shooting Primer

Should one be inquisitive about the sport of Bench Shooting, but doesn't know how to start, he should read these instructions:

The act of Bench Shooting consists of sitting at a bench with a rifle resting on sand bags. Ths object of this position is to eliminate, as much as possible, the errors encounted in the process of holding and firing a rifle. Bench Shooting is a sport, competitive or individual. The personal satisfaction gained in the ability to place one bullet on top of another, thus making a one hole group at 100 Yards and often at 200 Yards, has captivated an enthusiastic interest of many shooters for this kind of sport. It is particularly suited to both men and women who are not interested in indulging in the more vigorous or active sports. Therefore many Bench Shooters are of the older set. This does not mean, however, that it does not present a challange to the younger shooter; it will engage and tax his capabilities as well.

The current popularity of this kind of shooting was generated in the years 1949 and 1950. At that time a competitive program was introduced and has since been expanded.

Once an individual has selected the most appealing Bench Class, **it is very important that he attends some of the Matches.** Here he will learn much by asking questions, observing the equipment and methods used for loading and shooting. Any Bench Shooter is more than anxious to help a newcomer.

The equipment needed to participate is available for the most part, from PRECISION SHOOTING advertisers. It includes rifles, telescopes, rests, and sand bags, loading tools, bullets, cleaning materials, powder, primers, etc.

Lastly, if possible, get the advice of a person in the game before making purchases.

Should an individual or a club wish further information, write to Mr. Jack Deming, R.D. 1, Lawrenceville, Pa. 16929.

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The Building Of A "Glass Monster"

by Larry G. White
G113-A Longstaff Way
Santa Ana, CA. 92705

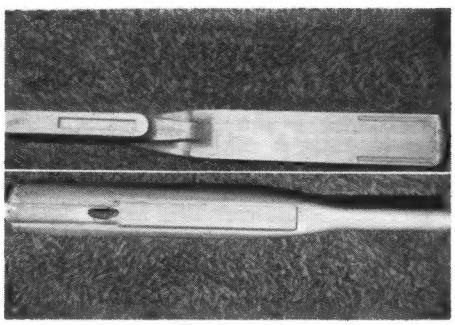
"The Glass Monster" from start to finish.

As any big gun benchrest competitor will attest, the building of a match winning rifle involves no small amount of time, patience and cash. These requisites — coupled with equipment complexity — has had, I'm sure, measurable effect on big gun popularity. In spite of this, owners patiently eulogize the big gun as the epitome of what goes/belongs on benches.

This past summer when I seriously began to entertain the idea of building a bench gun my first efforts involved talking to shooters at matches and keeping a mental score card with notations on equipment. Needless to say, I ended up more puzzled than the last time my kids gave me their cereal list. One can first weigh the pros and cons of rail versus conventional design, then V-blocks versus sleeves and/or actions, then on into types of rests, etc., etc.

Invariably, the puzzled novice will notice that many competitors shoot a .222, or variation thereof at 100 yards, and change to .308 for 200 yards. Our shooter can correctly reason this correlates with the difficulty in selling the home budgetmaker on not building one rifle, but two rifles. Then the shooter will either plunge in, or scrap the idea — or perhaps keep everything on the back burner for a wealthier day.

Many varmint shooters have narrowed costs by building 10 1/2 pound, highly competitive, combination rifles — rifles with interchanging barrels. By following this pattern in a big gun the expenses come very close to varmint rifle costs.



Top and bottom views of the Brown Precision Fiberglass Unrestricted Stock.

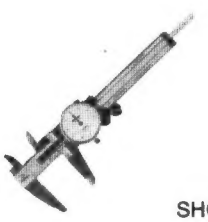
When the fiberglass stock makers, Chet Brown and Lee Six of Brown Precision, San Jose, California, recently unveiled their newest stock, a glass monster of permanent strength and stability — I opted for the combination route in a big gun.

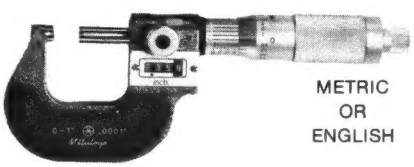
First of all, to the budget conscious, home-shop shooter who has to couple a minimum of expertise and equipment into the makings of a competitive big gun, adaptable to either bags or mechanical rests, this stock is the answer.

When I received the stock some of the handy features I noticed first included the molded recesses in the bottom of the fore-end for two round 3/8" x 6" guides; a 7/8" x 6" recess for either a "V" way or a round bar in the rear, and a barrel channel that will accept barrels to 1.500", with clearance. Presently, the action area is molded only for Shilen's huge square sleeve, but the easy workability of fiberglass permits the home enthusiast to put in whatever sleeve, action and/or blocks he desires.

The stock's long fore-end prevents any "balancing" effect on the front pedestal despite large barrel sizes and overhang. As in all of Brown's stocks, weight and strength can be specified when ordering. However, if the shooter decides he wants more weight, for example, in the back, after receiving the stock, a lead ingot of desired

MITUTOYO





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weight and size can be epoxied into the butt area, another versatile asset.

Having had success with glue-in combinations using Brown's varmint-style stock, I decided to epoxy a Shilen-sleeved action into this stock — the action being the home port for the two barrels, a .224 and a .308, with a bolt for each.

As in all glue-ins, trigger pin holes are required to facilitate the removal of a troublesome trigger, because action and stock separation — while possible in Brown's stocks — is not a "between relays" activity. At this point, a glance at the stock's integral trigger guard focuses your attention to the fact that "sudden" trigger removal would be difficult, at best — regardless of how neat your trigger pin holes are.

Irony aside, the easy way, while maintaining the stock's appearance is to simply make the trigger guard removable.

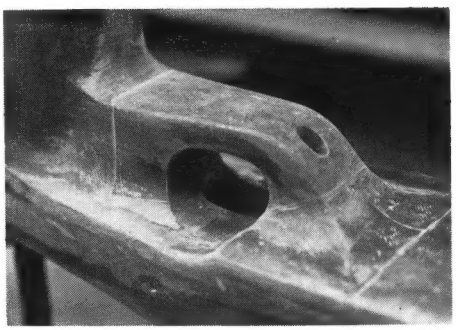
Here's my "how I did it" narration. I began by marking my cut lines around the guard, then drilling two 1/4" holes into the rear of the trigger guard. The two holes were 1/2" in from the edge of the guard on both sides and drilled to a depth that exceeded the horizontal cut line by 3/4 of an inch. These holes run parallel with the pistol grip and forward of the rear cut line. Next, a 3/16" hole was drilled into the front of the trigger guard. This hole was drilled somewhat parallel with the front taper of the trigger guard which runs into the stock's underside, and again, drilling was below the cut-off line. This was done to aid the later installation of two 1/4" guide pins, a retaining screw and an anchor nut for re-installing the trigger guard.

After the trigger guard has been cut away, and the guide pins and anchor nut epoxied in place, re-installation of the trigger guard will look like this. Note the excess epoxy left to harden.

To remove the guard, two straight cuts (as pictured) were necessary. Then, with the trigger guard removed, the 3/16" hole in the cut off guard is carefully countersunk to accept a 3/16" flat head machine screw. Following this, the 3/16" hole in the stock was opened with a Dremel-tool to accept a 3/16" anchor nut. (If you don't have an anchor nut, a small piece of shaped 1/8" flat stock drilled and tapped to accept the screw works equally as well.) The ears of the anchor nut work to give the epoxy more area for contact and prevent pulling the nut out of the epoxy when tightening the guard back in place.

The stock was then turned over, leveled and clamped up in a drill vise. With the trigger opening marked, a straight-face routing bit was chucked up in the drill press and the trigger opening rapidly milled to size. If you have a shop vacuum, by the way, this has to be the best time to have it running. The next move was to cut off two pieces of 1/4" round stock, each measuring 1 1/2" long, coating one-half of their length with mold release and epoxying the uncoated ends into the two 1/4" holes of the stock proper. Moving to the front of the trigger guard area, the anchor nut was lightly plugged with paper to keep epoxy out of the threads and set into epoxy, too. Prior to setting the guard back in place, the mating side of the trigger guard was covered with scotch tape (this prevents gluing it all back together) and an opening made in the tape for the guide pins and the retaining screw.

After the guard was set in position, the flat head screw was coated with release agent and then threaded into the anchor nut. The alignment was checked and the excess epoxy wiped away. Having arrived at this point with no problems, I figured it was time to secure and add more grounds to the coffee pot.



With the excess epoxy filed and sanded away the trigger guard's original profile is once again restored.

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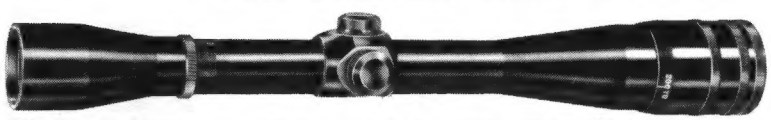

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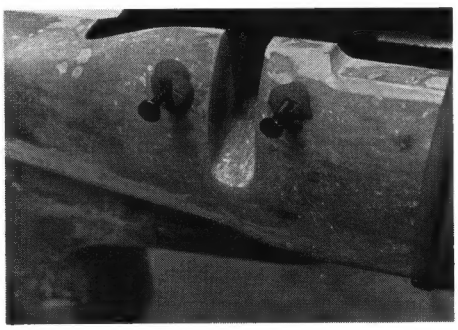
Back at the scene again, I sanded the excess hardened epoxy until the original trigger guard profile was restored, then backed the retaining screw out. Two taps on the side of the trigger guard with a soft mallet was enough to loosen the guard, and I was able to lift it off. This left only the tape to peel away before I went on with the remainder of the stock finishing.

Removal means simply loosening the flathead machine screw in the front of the guard. Now visible are the two guide pins and the anchor nut.

The huge Shilen-sleeved action required a minimum of time to bed since the stock comes pre-molded for the sleeve. Initial contact of the square sleeve's sides inked somewhat uneven and the high spots were scrapped away; barrel alignment down the stock's barrel groove showed good centering, and I went ahead and marked the bolt handle opening along with the trigger pin holes.

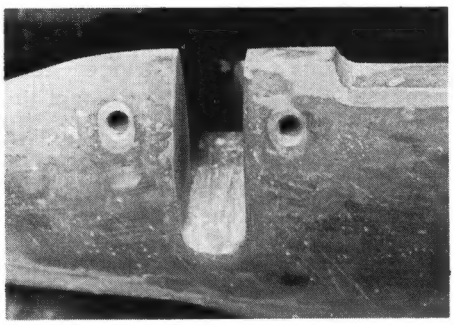
To insure a good fit around the port and bolt handle slot, the action must be set in place several times and minute amounts of fiberglass filed and sanded away. Here's where the stock's fiberglass construction is appreciated. If by a stroke of over-enthusiasm you should cut an opening too large, all is not lost — merely mix and dab some Bondo, or similar auto body filler, over the mistake and in a few minutes you can have another stab at doing things right. I might also mention that to save some wear and tear I removed the barrel leaving only the action to lift back and forth.

Some may use more patience in locating and drilling trigger pin holes, but I go through the guess 'ta-mated



Nails pushed through fast-setting body filler, into the action, are easily removed and provide accurate trigger pin hole alignment.

marks with a 3/32" drill, then, if I'm off any, I enlarge the hole as necessary with a larger drill. The enlarged holes are filled with the fast-setting Bondo and close-fitting nails pushed into the trigger pin holes. When the Bondo is hard to the thumb nail, a pair of pliers is used to remove the nails. The Bondo does not adhere to the action like epoxy and any that is in the trigger pin holes comes out easily.



After nail removal the holes are drilled out to 5/32" and the sides are cleaned up.

A file and sandpaper is used to remove the excess Bondo, being careful not to cut below the profile of the stock. Next, the holes are enlarged with a 5/32" drill followed by a slight twist of a counter-sink, which adds the finishing touch.

At this point the action was made ready to bed. A layer of Scotch tape is run down both sides of the sleeve and the trigger slot in the bottom is covered as well as the screw holes. Mold release is sprayed on the bottom of the sleeve as well as the taped sides, the front, and the back of the action (Shilen's sleeve uses the back of the sleeve as the recoil lug).

Since a release agent is used in the stock's mold, the bedding area in the stock is well sanded and wiped clean with alcohol prior to "painting" in a layer of epoxy. With the epoxy in, the barreled action is set in place and surgical tubing is criss-crossed around the stock and sleeve for a constant, even force. If alignment is on the bottom, the hand tightened barrel is removed leaving an unweighted sleeve

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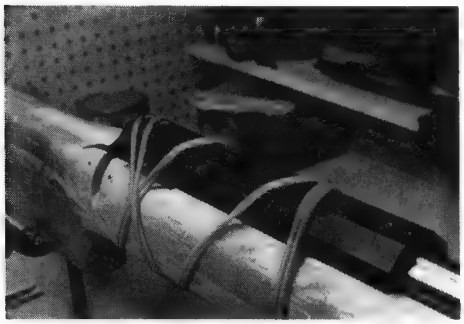

After the barreled action is set into the epoxy several turns of surgical tubing are made around the sleeve and stock to provide an even force. Alignment was checked and the barrel removed prior to the hardening of the epoxy.

After the overnight cure, the barrel is slipped back into the sleeve and snugged up hand tight into the action. Then, by clamping the end of the barrel in a wiggle-free position the stock is pulled away from the barreled action, leaving a glossy, close-fitting mold of the sleeve.

For cleanup, alcohol works well to safely clean the remaining release agent from the metal work and to clean away any release agent left in the stock. After the cleanup was completed, and the trigger pin holes checked for displaced epoxy, I installed the trigger in the action and made ready for the "glue-in".

At this point, I held off on the "glue-in" until I had masked off the action area and primed the stock. While "priming" the stock entails a bit more than simply spraying on your favorite discount store's hot-rod primer. I would like to add that Brown Precision offers a priming kit designed specifically for fiberglass. In terms of time and satisfaction, the kit should be considered a necessity.

For the purposes of brevity, the glue-in was completed after the exterior of the stock was pin-hole free, primed and ready for painting.

The action area of the stock is once again sanded with 320 paper, just enough to break the glass-like surface, wiped clean and then the bottom, sides and recoil lug area conservatively "painted" with epoxy — being very sure that the epoxy is kept away from the trigger.

Finally, the unbarreled action and trigger are carefully set back into the molded stock cavity and a few light turns of the surgical tubing taken around stock and sleeve. As a final safety precaution, I took a Q-tip and went around the trigger (guard removed) and removed all potential drops of excess epoxy; any epoxy forced out along the sides of the sleeve should be cleaned away at this time, too.

The epoxy I use, by the way, has a mixing ratio of 4 parts resin to 1 part hardener and is the same as used in the construction of the stock.

If epoxy obtainability is a problem in your area, bedding "kits" are available from Brown Precision. Simply let them know what you're attempting to do and they will box up what's needed and probably pass along some helpful suggestions.

When you've completed the last step — save for later glueing in the V-way and guide bars, which take only a few moments — you should have everything to your satisfaction; that is to say, you have gone and done it — all with no whispered secrets and no magic words.

It's time now to stop, step back and admire your project, and to decide on a paint color. The painting itself can be done just as easily, that is, if you have taken some time in priming to free the stock surface of pinholes and chips.

A good spray gun and quality paints will give results as pictured. Naturally, the "trick" painting and detailing that I put into this stock requires extra equipment and developed skills, but aside from this anyone can realize a finish which is akin to the professionals. Besides, if you're like the average benchrest shooter, you like to do as much of the work as you can.

The most satisfying part, of course, is looking in the scope after the tenth shot and seeing little or no change in one very tiny hole down range — you will then believe 'glass and paint are "in" for big guns, too!

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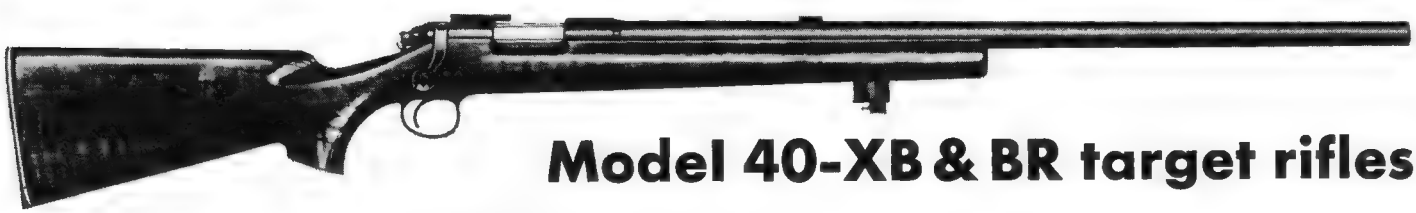

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News concerning the Oehler Skyscreen system. Free adjustment for units offered

The overwhelming majority of Skyscreen users have had nothing but praise for the performance of the little Skyscreen units. We certainly hope that you have been satisfied with the performance of your set. However, approximately two percent of the users have reported problems we could not explain. In our efforts to find the explanation for these problems, we have just completed an extensive retesting program.

We found that stray light reflections from the bullets are more significant than our original tests indicated. Blackening the bullets with smoke or a felt-tip pen is helpful, but not 100% effective, and the problem extends to bullets which are not obviously bright. The glints of reflected light are most serious on days with clear skies and when the sun is low in the sky. (You can observe the reflections that cause the problems if you hold a bullet over your head and observe it against the sky from the viewpoint of a Skyscreen. As expected, the bullet will block off a significant amount of light from the sky, but with the sun at certain angles you can see a small glint of light on the ogive of the bullet.)

These tiny glints of light can cause either a complete failure of the screen to detect the passage of a bullet, or can cause an error of approximately 1% in the velocity reading. The failure to trigger the chronograph is obvious, but the small errors usually go undetected. A glint from near the tip of the bullet can cause a small error in the velocity reading because the screen will trigger on the body of the bullet after the glint leaves the field of view. A glint farther back on the ogive can cause a complete failure to trigger because it remains in the field of view longer and effectively cancels the shadow of the bullet.

Although we have not been able to verify it in the field, light reflected from the clear anodized aluminum top cover of the Skyscreens could potentially cause similar problems. We chose the bright covers to keep the units cooler, but now believe that the reflected light problem is potentially more serious than any temperature effects in the circuit. In the future we will change to a black cover.

You can avoid the glint problem with your present Skyscreens by providing a shade for the units. The sunshade must be placed so that the bullet is shaded from the direct light of the sun while passing over the light slot of each Skyscreen, and so that the screens can still see the bullet silhouetted against the sky. If the day is cloudy or hazy and there are not distinct shadows, you don't have to provide any extra shade

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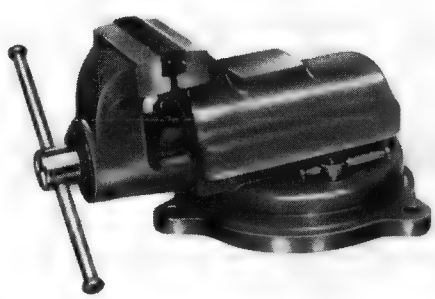

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and will actually have optimum conditions for using the Skyscreens.

We have developed a modification for your existing Skyscreens to counteract the glint problem, and offer this circuit modification to you at no charge. This circuit change allows you to use your Skyscreens without the suggested shade and our tests have shown it to be very effective in reducing the glint problem. If you will return the circuit board assembles (including the output jack) from your Skyscreens to us, we will send you a pair of modified and tested circuit boards. Note: Skyscreen units shipped after October 1, 1975, include this modification.

Fewer than 5% of our Skyscreen customers have reported any problems whatsoever with their systems and we have made every effort to correct these problems. However, we suspect that there are others who may have had unexplained problems and din't bother to complain, and still more users with the small errors that went unnoticed. We would appreciate your returning the circuit modules from your Skyscreens for exchange so that we can give you the best product we know how to build. There will be no charge and we will make every effort to mail the exchange parts back to you within a few days after we receive your units.

Why have so many Skyscreens worked so well for so long, and why didn't we catch the glint problem in our initial development tests? The glints give problems **only** under certain conditions of sun angle, bullet shape, and clear skies. We missed that combination in our earlier tests and evidently very few of our customers have hit that same set of conditions.

We hope that this letter describing a **potential** problem you may encounter with your Skyscreens does not cause you to lose confidence in your (and our) equipment. Our recent tests have confirmed to us again that the Skyscreens are excellent performers, but we feel a sincere obligation to provide the **very** best instruments available. We have found a way to make your Skyscreens even better.

Kenneth L. Oehler, Ph. D.

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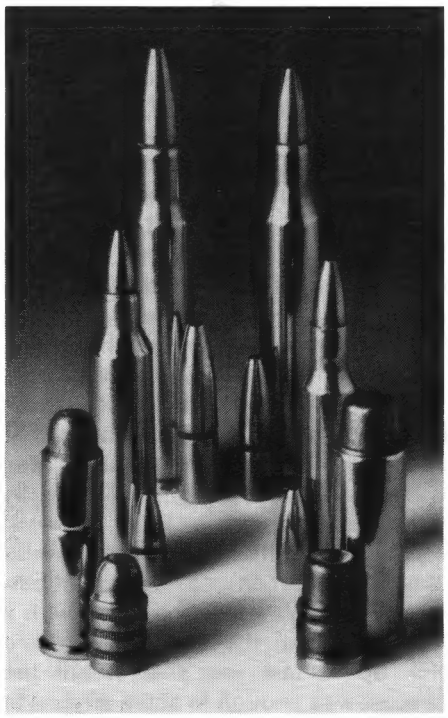

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DUNHAM'S BAY
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February 1, 1976
Unregistered Shoot Report

There was a change in the weather, but not exactly all that we had been waiting for. It warmed up about thirty degrees, just enough to give us freezing rain and icy roads with gusty winds. Thirty-two shooters were on hand and it was a successful shoot. Allie Euber showed us how to get the most out of a 6MM PPC under these conditions as he was all by himself at the finish. The only thing he missed was small group, which was won by Myles Hollister with a .125.

This was our third shoot of the Winter season, and conditions have to get better later on. We had hoped that, with a warming trend, the attendance would pick up to last year's level but the forecast was enough to scare anyone in their right mind. Enough said on that subject.

Top ten in
Heavy Varmint were:

Allie Euber	.2562
Myron Williams	.3372
Dave Burke	.3374
Charlie Fountaine	.3498
Ricky Butler	.3500
Don Hamilton	.3500
Lee Euber	.3510
Bob Reid	.3510
Tom Boise	.3696
Ira Farnsworth	.3736

Top five in
Hunter Class were:

Normand, St. Pierre	247-10X
Bob Reid	242- 7X
Ira Farnsworth	240- 8X
Elmer Hills	239- 4X
Jim Robinson	232- 6X

February 15, 1976 Shoot

Four weeks in a row is just too much to believe. It seems that the weather gets progressively worse each match — two weeks of zero temperatures, one week of freezing rain and then today a virtual blizzard. Forty-four shooters made this the largest shoot so far this winter but we are still hoping for a decent day to see how many we can really expect.

Dave Hollister was here for his first match of the season and thought we had been exaggerating things as he fired a nice little .104 for small group of the day. Rick Butler won his first match ever with a consistent set of targets. This has always seemed to me the answer — not necessarily spectacular scores, just the old steady pecking away that proves out at the end of the day.

Top ten in
Heavy Varmint were:

Ricky Butler	.3538
Lee Euber	.3628
Dave Hollister	.3698
Sally Tardy	.3754
Allie Euber	.3936
Erwin Elithorpe	.3940
Myles Hollister	.3998
John Hollister	.4090
Dick Brownell	.4212
Jim Jordan	.4288

Top five in
Hunter Class were:

Bob Reid	241-5X
Normand St. Pierre	240-9X
Elmer Hills	238-3X
Ira Farnsworth	234-6X
Brian Hollister	229-1X

Charles Fountaine, Reporter

OSWAYO VALLEY
ROD & GUN CLUB
Millport, Pa.

On Sunday, January 25, 1976, the Millport Saturday Night shooters held the 4th shoot of the season amid snow, rain and sleet. The results are as follows:

Matches

1. C. Gamble	.250
2. E. Hanes	.209
3. C. Detsch	.300
4. C. Gamble	.272
5. C. Gamble	.345
6. C. Gamble	.320

Aggregates

1. Gamble	.3164
2. Hanes	.3206
3. Decker	.3570
4. Detsch	.3634
5. Olson	.3798

B. Mills, Reporter

IOWA STATE
CHAMPIONSHIP
HEAVY VARMINT 1975

1. W. Motley	.3416
2. H. Neshiem	.3462
3. D. Smith	.3472
Small group — J. Dowodzenka	.152

SPORTER 1975

1. H. Hallgrem	.3336
2. J. Dowodzenka	.3744
3. M. Duvel	.3998
Small group — H. Hallgrem	.185

Ed Kvarda, Match Director

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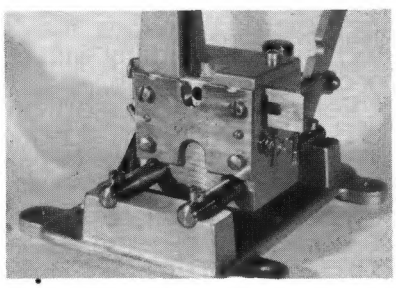

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SOUTH CREEK
ROD & GUN CLUB
Match 3
February 1, 1976

There were 53 shooters present, 51 adult and 2 junior shooters.

Warm Up Match

1. George Stickler ..... .198
2. Guy Green ..... .206
3. Woody Ellison ..... .226
4. Floyd Stohner ..... .238

Match 1

1. Bobby Hart ..... .206
2. Jack Deming ..... .209
3. George Stickler ..... .228
4. Fred Kurtz ..... .234

Match 2

1. Bill Gordon ..... .221
2. Paul Olewine ..... .236
3. Dick Otis ..... .263
4. Phil Toluba ..... .304

Match 3

1. Harry Monnell ..... .264
2. George Stickler ..... .270
3. Art Blensinger ..... .270
4. Benton McConnell ..... .290

Match 4

1. Dave Calkins ..... .167
2. Bill Gordon ..... .217
3. Gerald Malerba ..... .264
4. Mort Gross ..... .285

Match 5

1. Harry Monnell ..... .170
2. Don McLlwain ..... .227
3. Ross Weaver ..... .250
4. Gerald Malerba ..... .256

Grand Agg. Winners

1. Harry Monnell ..... .3648
2. Don McLlwain ..... .3674
3. George Stickler ..... .3678
4. Jerry Guilds ..... .3806
5. Art Blensinger ..... .3810
6. Gerald Malerba ..... .3890
7. Judy Deming ..... .3900
8. Bill Gordon ..... .3978
9. Bobby Hart ..... .4124
10. Phil Toluba ..... .4212

3 Match Agg.

1. Jerry Guilds ..... .4968
2. Jack Deming ..... .5052
3. Stanley Bombaski ..... .5238
4. Gary Chapin ..... .5406
5. Mike Williams ..... .5516
6. Fred Horton ..... .5563
7. George Stickler ..... .5621
8. Fred Kurtz ..... .5680
9. Benton McConnell ..... .5752
10. Paul Kempfer ..... .5799

February 15, 1976

There were 51 shooters, plus 1 junior for a total of 52 shooters.

Grand Aggregate

1. Clyde Hart ..... .3582
2. Guy Green ..... .4284
3. Mike Griffin ..... .4568
4. Bill Theis ..... .4638
5. Jack Deming ..... .4948
6. Ross Weaver ..... .5028
7. Art Blensinger ..... .5076
8. Jack Gutchess ..... .5140
9. Phil Toluba ..... .5256
10. Tom Fargnoli ..... .5300

Warm-Up

1. W. Malinski ..... .037
2. Elliot Buffard ..... .251
3. Scott Temple ..... .294
4. Bill Theis ..... .296

Match 1

1. Art Blensinger ..... .225
2. Clyde Hart ..... .272
3. Carl Lynn ..... .326
4. Paul Thompson ..... .334

Match 2

1. Judy Deming ..... .306
2. Guy Green ..... .309
3. Jack Gutchess ..... .340
4. Mike Griffin ..... .350

Match 3

1. Bill Theis ..... .164
2. Dick Mastin ..... .233
3. Clyde Hart ..... .277
4. Tom Fargnoli ..... .285

Match 4

1. Ross Weaver ..... .337
2. Charlie Straight ..... .374
3. Jeanne Lynn ..... .380
4. Frank James ..... .416

Match 5

1. Floyd Stohner ..... .333
2. Clyde Hart ..... .340
3. Tom Fargnoli ..... .396
4. Jack Deming ..... .403

Small Group

W. Malinski ..... .037

George Stickler, Secretary

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(Tentative) IBS Registered Match Schedule, 1976

May 15	Englishtown BRSA	HV
May 22-23	Council Cup	HV, LV, BR, EXP.
May 29-30	Camillus	HV-LV
June 12-13	South Creek	HV-SP
June 19-20	Pine Tree Rifle Club	HV-LV-BR (5 shot) New York State Championship
July 3-4	Mainville	HV-LV-BR (5 shot) Pennsylvania State Championship
July 10-11	Council Cup	HV-LV-BR-EXP (5 shot)
July 17-18	South Creek	BR-EXP Championship and Registered Heavy Varmint
July 24-25	Camillus	HV-LV
August 12-15	Pine Tree Rifle Club	Varmint Championships HV-LV-SP
September 4-5	Mainville	200 & 300 Yard Championships HV-LV-BR-EXP
September 11	Englishtown BRSA	HV-LV 100 yd. only New Jersey State Championship

Canadian BRS Registered Matches

May 1-2	Stittsville Shooting Ranges	HV-LV-SP & any Two Gun
June 26-27	Stittsville Shooting Ranges	HV-LV-SP & and Two Gun Canadian Varmint Championships
Aug. 27-28-29	Stittsville Shooting Ranges	HV-BR (5 shot) 100, 200 & 300 yard

(Tentative) IBS Registered Hunter Rifle Match Schedule

April 11	Sulphur Springs	12 Noon
April 18	York IWLA	12 Noon
May 2	Sulphur Springs	12 Noon
May 9	Mainville (200 yard)	12 Noon
May 16	York IWLA	12 Noon
May 29	Englishtown BRSA (Also UN & HV)	5:00 p.m.
June 5	Mainville (100 yard)	12 Noon
June 6*	Mainville (200 yard) (Pennsylvania State Championship)	10:00 a.m.
June 20	York, IWLA	12 Noon
June 26	Englishtown BRSA	12 Noon
June 27	Sulphur Springs	12 Noon
July 10	Englishtown BRSA (Also UN & HV)	5:00 p.m.
July 18	York IWLA	12 Noon
July 24	Englishtown BRSA (Also UN & HV)	5:00 p.m.
August 1	Mainville	12 Noon
August 8	Sulphur Springs	12 Noon
August 15	York IWLA (Country Championship)	12 Noon
August 21	Englishtown BRSA	5:00 p.m.
August 22	Mainville	12 Noon
August 29	Sulphur Springs	12 Noon
Sept. 18 and Sept. 19	York IWLA (International Championships)	10:00 a.m.
Sept. 25	Englishtown BRSA (New Jersey State Championships)	4:00 p.m.
Sept. 26	Mainville (200 yards)	12 Noon
October 10	Mainville	12 Noon
October 17	York IWLA	12 Noon